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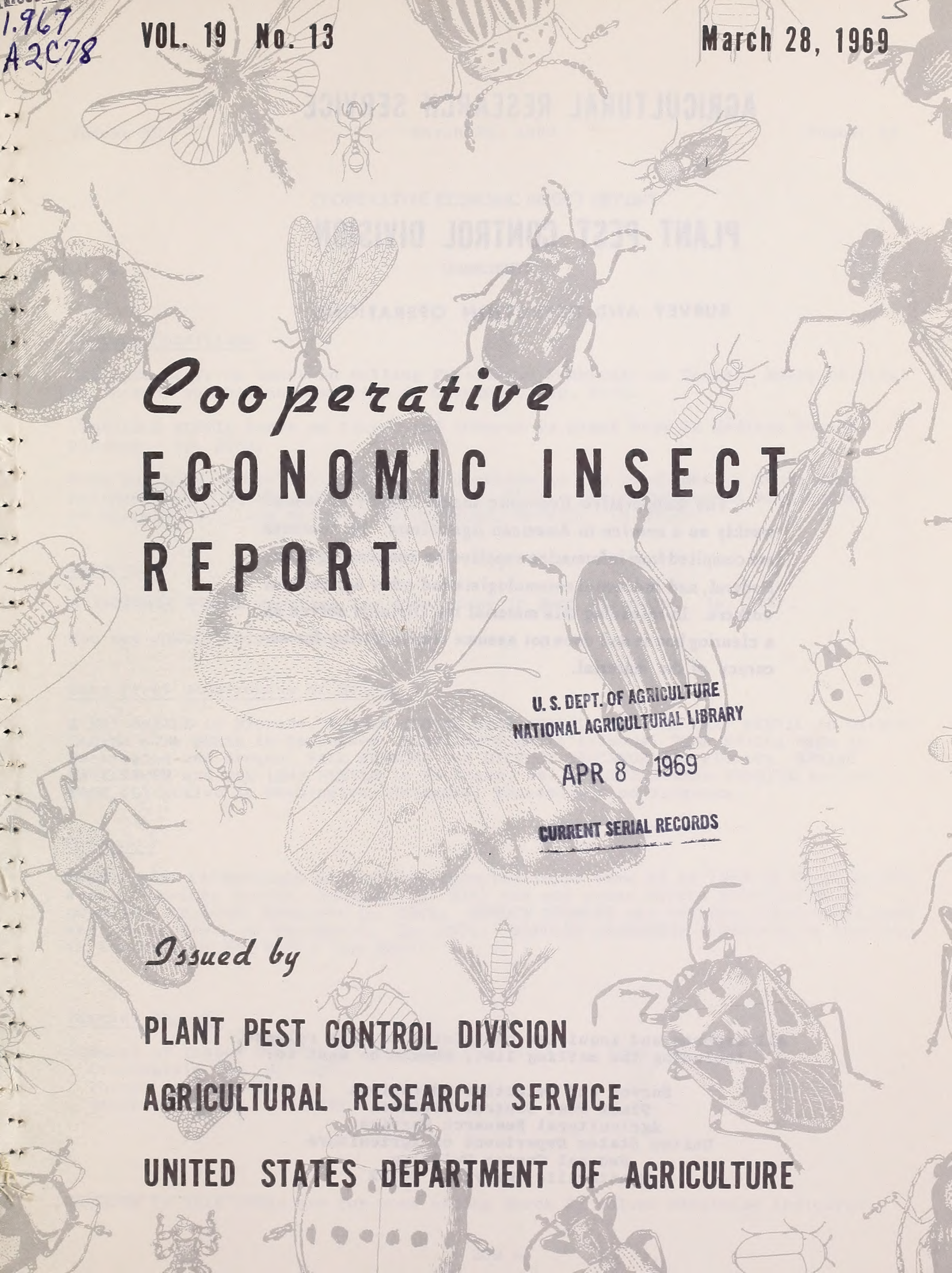

VOL. 19 No. 13 March 28, 1969

Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 19 March 28, 1969 Number 13

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG heavy on wheat in Rolling Plains and Panhandle of Texas. Heavy on wheat in Jackson and Tillman Counties in Oklahoma. (p. 211).

VEGETABLE WEEVIL heavy on flue-cured tobacco in plant beds in Madison County, Florida. (p. 213).

PINK BOLLWORM larvae collected on wild cotton at two locations in Everglades National Park, Monroe County, Florida (p. 216). Larvae medium on wild cotton at Waipahu, Ewa, and Waianae, Oahu Island, Hawaii. (p. 217).

Detection

A JAPANESE WEEVIL reported for first time in West Virginia. (p. 218).

For new county records see page 218.

Some First Occurrences of Season

A MAY BEETLE in Florida, LESSER CLOVER LEAF WEEVIL and PEA LEAF WEEVIL in Oregon, CLOVER STEM BORER in Tennessee, BEET ARMYWORM in Arizona, PEAR PSYLLA eggs in Washington and Oregon, FALL WEBWORM and HICKORY SHUCKWORM in Florida, SPRING CANKERWORM and ELM LEAF BEETLE in Michigan, and a SUBTERRANEAN TERMITE in Iowa. FACE FLY active in Washington, Nebraska, Tennessee, and Virginia.

Forecasts

FOREST TENT CATERPILLAR populations expected to be same as in 1968 in Fort Collins area of Larimer County, Colorado (p. 214) and may cause severe defoliation of hardwoods in Lower Michigan (p. 227). SPRUCE BUDWORM may require controls in some recreation areas in Minnesota. (p. 223). SADDLED PROMINENT infestations expected to increase in New York. (p. 224).

Special Reports

Summary of Insect Conditions in the United States - 1968
  Ornamentals (pp. 219-221).
  Forest (pp. 222-226).
  Shade Trees (pp. 226-232).

Reports in this issue are for week ending March 21 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING MARCH 24

HIGHLIGHTS: A rising temperature trend occurred over most of the United States last week. More snow fell from central Iowa to Upper Michigan and thunderstorms occurred in the South. The snowpack in the West, North Central, and Northeast decreased with only minor local flooding.

PRECIPITATION: Rain, accompanied by strong winds, fell along the Washington and Oregon coast early in the week. Showers occurred in northern California and spread eastward to the Rocky Mountains. Midweek brought snow from the northern Great Plains to New England with 5-6 inches of new snow common in southern Minnesota, west-central Iowa, Wisconsin, and Upper Michigan. Marshall, Minnesota, received 10 inches, and 8-12 inches fell locally in central Upper Michigan. Thunderstorms brought generous rains to most of the Southeast early and late in the week with several sunny days at midweek. Rains in Indiana, Ohio, and Kentucky on Sunday afternoon and evening followed several weeks of dry weather, during which brush and grass fires became increasingly frequent. The heavy snowpack in the West, the northern Great Plains, and eastward to New England decreased somewhat. In Washington and other Western States, much of the snow melted in the foothills and lower range and farm lands with most of the water percolating into the ground and with very little runoff. The snowmelt caused local high water problems in Montana and rising streams in Iowa. Thawing progressed slowly in the Dakotas and Minnesota, but posed a threat of flooding because of the high water content. Many bare areas appeared in New England. Weather of the week continued on page 218.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - WYOMING - None in wheat in Laramie, Goshen, and Platte Counties. (Parshall). COLORADO - Second instars on wheat ranged 0-2 per linear foot in Briggsdale and New Raymer area, Weld County. None in 4 northeastern counties. (Johnson, Pilcher). KANSAS - None in wheat in 8 south-central counties. (Simpson). OKLAHOMA - Ranged 1-5 per 10 linear feet in most wheat in 7 north-central counties. Light in Blaine and Major Counties. Averaged 5 per 10 linear feet in barley in Kingfisher County. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - WYOMING - None in wheat in Laramie, Goshen, and Platte Counties. (Parshall). COLORADO - None on wheat in northeastern area. (Johnson, Pilcher). KANSAS - Less than 1 per row foot in wheat examined in Ottawa, Cloud, Mitchell, Osborne, Smith, Phillips, Rooks, and Ellis Counties. (Simpson). TEXAS - Maximum number per row foot in wheat March 17-18 by county: Randall 500, Potter 250, Swisher 3,000, Briscoe 3,000, Hall 2,000, Deaf Smith 3,000, Parmer 1,200, Castro 5,000, and Oldham 250. Wheat generally good. Above counts scarce as control excellent. Survey completed in 4 additional counties March 19. Counts per row foot by county: Hartley 20, Dallam 50, Sherman 50, and Moore 300. Lighter in northern panhandle area. (Daniels). OKLAHOMA - Heavy in Jackson and Tillman Counties. Up to 150 per linear foot on wheat in Beckham County. Ranged 30-35 in Cotton County. Counts of 0-7 in Grant, Garfield, Kay, Noble, Payne, Logan, Kingfisher, Major, and Blaine Counties. (Okla. Coop. Sur.). NEW MEXICO - Reaching control levels in eastern area. (N.M. Coop. Rpt.).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - This species and Macrosiphum avenae (English grain aphid) light and scattered in most barley in Maricopa and Pinal Counties. (Ariz. Coop. Sur.). NEW MEXICO - R. maidis light to moderate on barley in Dona Ana County. (Campbell).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Averaged 1 per potato plant in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Averaged 75 per square foot in one Chaves County alfalfa field; ranged 0-25 per square foot in other fields surveyed. (Mathews).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Light, 1-2 per linear foot, in occasional wheatfields in central and north-central areas and in barley in Kingfisher County. (Okla. Coop. Sur.). MISSISSIPPI - Light on wheat in Oktibbeha County. (Dinkins, Mar. 14).

AN APHID (Rhopalosiphum padi) - CALIFORNIA - Medium on barley in Kerman, Fresno County. (Cal. Coop. Rpt.). OKLAHOMA - Averaged 50 per linear foot in 12 to 15-inch rye in Noble County. (Okla. Coop. Sur.).

PALE WESTERN CUTWORM (Agrotis orthogonia) - NEBRASKA - Hatching in southeast Scotts Bluff and northwest Banner Counties. No wheat damage. (Hagen, Mar. 18).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged 1-15 per linear foot in scattered wheatfields in north-central and northwestern areas. (Okla. Coop. Sur.). TEXAS - Damaging wheat in Foard County. (Boring).

TURF, PASTURES, RANGELAND

AN APHID (Rhopalosiphum padi) - CALIFORNIA - Heavy on grass and iris plants in Encanto, San Diego County. (Cal. Coop. Rpt.).

CHINCH BUG (*Blissus leucopterus*) - KANSAS - Bunch grass samples collected in late February from 55 central and eastern counties. Total of 173 samples collected. Average number per square foot by district as follows: Northeast 0.89 (only in Riley County); east-central 14.0; southeast 17.3; north-central 0; central 67; south-central 95.6. Highest average counts above 100 per square foot by county: Morris 114 (range 0-4); Dickinson 222 (range 0-5); Marion 212 (range 0-5); Harvey 137 (range 0-150); Sedgwick 107 (range 0-21). (Wilde, Martinez, Redding, Simpson).

A MAY BEETLE (*Phyllophaga tristis*) - FLORIDA - First emergence of year noted in Gainesville area, Alachua County. (Woodruff, Mar. 19).

GREEN JUNE BEETLE (*Cotinis nitida*) - ALABAMA - This species and *Phyllophaga* spp. (white grubs) ranged 20-25 per square foot in Coastal Bermuda grass in Cullman County. (Baswell).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - MISSISSIPPI - Larval counts per 200 stems by county: Oktibbeha 10; Pontotoc 7; Marshall 13. Adults per 10 square feet by county: Oktibbeha 1; Pontotoc 2; Marshall 1. (Pitre, Mar. 14). WEST VIRGINIA - Samples of overwintering eggs show low viability in standing alfalfa stems through February. Percent hatch by month: November 88, December 20, January 2, February 0. Percent hatch in stems on ground surface in February much higher, 36. (W. Va. Ins. Sur).

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - ARIZONA - Larvae averaged 20 per 100 sweeps in alfalfa in Pinal County. (Ariz. Coop. Sur.).

LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) - OREGON - Overwintering adults active in Salem, Marion County. (Westcott, Mar. 14).

CLOVER SEED WEEVIL (*Miccotrogus picirostris*) - MISSOURI - Adults collected with Malaise trap at Ashland, Boone County, July 12, 1968. This is a new county record. (Munson).

PEA LEAF WEEVIL (*Sitona lineatus*) - OREGON - Overwintering adults flying in Salem, Marion County. (Westcott).

CLOVER STEM BORER (*Languria mozardi*) - TENNESSEE - This species and *Conotrachelus seniculus* (a weevil) observed on ragweeds bordering cornfields in Grundy County. (Williams).

PEA APHID (*Acyrthosiphon pisum*) - ARKANSAS - Low, 30-40 per 100 sweeps, in bur and crimson clover in Faulkner and Lee Counties; little buildup to date. (Boyer). NEW MEXICO - Light to medium on alfalfa in Chaves and Dona Ana Counties. (N.M. Coop. Rpt.). ARIZONA - Averaged 250 per 100 sweeps of alfalfa at Pinal County. (Ariz. Coop. Sur.).

LYGUS BUGS (*Lygus* spp.) - ARIZONA - Averaged 20 nymphs per 100 sweeps in Pinal County. (Ariz. Coop. Sur.).

THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) - ARKANSAS - Active in eastern area. Adults ranged 8-10 in 100 sweeps in bur clover in Lee County. (Boyer).

ALFALFA CATERPILLAR (*Colias eurytheme*) - ARKANSAS - Second instars ranged 5-6 in 100 sweeps on bur clover in Lee County. (Boyer).

WESTERN FLOWER THRIPS (*Frankliniella occidentalis*) - ARIZONA - Averaged 250 per 100 sweeps on alfalfa at Pima County. (Ariz. Coop. Sur.).

TOBACCO

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - FLORIDA - Larvae on flue-cured tobacco in plant beds; heavy on 800 square yards in Madison, Madison County; scattered over 1,000 square yards at Live Oak, Suwannee County. Collected and determined by D. Lundy and B. Whitty. (Fla. Coop. Sur.).

SUGARBEETS

BEET ARMYWORM (*Spodoptera exigua*) - ARIZONA - Larvae very light in many fields in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

BROWN STINK BUG (*Euschistus servus*) - ARIZONA - Adults light in most fields in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

DESERT CORN FLEA BEETLE (*Chaetocnema ectypa*) - ARIZONA - Light on potatoes in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Moderate on potato plants 6 inches high. Treatments underway in Salt River Valley, Maricopa County.(Ariz. Coop. Sur.).

COLE CROPS

A SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata tenella*) - NEW MEXICO - Infesting lettuce in Mesilla Valley, Dona Ana County, and Hatch Valley, Sierra County. Some controls being applied. (Campbell).

DIAMONDBACK MOTH (*Plutella xylostella*) - FLORIDA - Very severe on broccoli and cauliflower at Bradenton, Manatee County. (Kelsheimer, Mar. 3).

CABBAGE LOOPER (*Trichoplusia ni*) - FLORIDA - Observed 154 full-grown larvae on 40 cabbage plants in cupping stage on unsprayed plots at Bradenton, Manatee County. Collected and determined by E.G. Kelsheimer March 3. No problem now on cabbage at Hastings, St. Johns County; Belle Glade, Palm Beach County; and Sanford, Seminole County. (Fla. Coop. Sur.).

GENERAL VEGETABLES

AN APHID (*Acyrthosiphon scariolae*) - ARIZONA - Many lettuce fields in Maricopa and Pinal Counties being treated. (Ariz. Coop. Sur.).

AN ACARID MITE (*Tyrophagus dimidiatus*) - CALIFORNIA - This mite and *Myzus persicae* (green peach aphid) caused medium damage to spinach in Soledad area, Monterey County. Wet weather caused mites to move up onto leaves from low crowns. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

HICKORY SHUCKWORM (Laspeyresia caryana) - FLORIDA - First adult emergence in outdoor cages noted at Monticello, Jefferson County. Collected and determined by W.H. Whitcomb March 6. This earlier than last year. (Fla. Coop. Sur.).

PEAR PSYLLA (Psylla pyricola) - OREGON - Oviposition underway in Portland, Multnomah County. (Gray, Mar. 14). WASHINGTON - Adult count 1 per trap, more in sagebush than orchard; no egg differentiation March 5 in Wenatchee and Chelan Counties. (Rushmore). First adults caught in flight at Yakima, Yakima County, March 3-5. (Landis, Fox). First eggs observed at orchard in Parker Heights, Yakima County, March 7. (Johnson).

CITRUS

THRIPS - ARIZONA - Frankliniella occidentalis (western flower thrips) moderate on citrus trees in Eloy area, Pinal County. Some activity by Scirtothrips citri (citrus thrips) noted in block in same area. (Ariz. Coop. Sur.).

YELLOW SCALE (Aonidiella citrina) - CALIFORNIA - Heavy and general on citrus trees in Nicolaus, Sutter County. (Cal. Coop. Rpt.).

A SPIDER MITE (Eotetranychus lewisi) - CALIFORNIA - Medium on citrus trees in San Diego, San Diego County. (Cal. Coop. Rpt.).

ORNAMENTALS

A WALSHIID MOTH (Periploca nigra) - CALIFORNIA - Heavy in juniper shrubs in Placerville, El Dorado County. (Cal. Coop. Rpt.).

A CHRYSAUGID MOTH (Galasa nigrinodis) - VIRGINIA - Larvae on English boxwood light in Hanover County (Innes, Feb. 11), medium in Charles City County (May, Feb. 28), and light in Charlotte County (May, Mar. 12).

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - CALIFORNIA - Heavy on poinsettia nursery stock in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

MINING SCALE (Howardia biclavis) - FLORIDA - All stages severe on stems of undetermined number of 200 dombeya hybrids, Dombeya sp., at Miami, Dade County. Collected by J. Dillon February 26. This is a new Florida Department of Plant Industry host record. (Fla. Coop. Sur.).

TEA SCALE (Fiorinia theae) - ALABAMA - Heavy increase of crawlers noted on camellia and holly. Averaged 25-75 per leaf on heavily infested plants. Many growers applying controls. (McQueen).

FOREST AND SHADE TREES

A SOFT SCALE (Toumeyella pinicola) - CALIFORNIA - This species and Phenacaspis pinifoliae (pine needle scale) medium on Monterey pine in Oakland, Alameda County. (Cal. Coop. Rpt.).

FALL WEBWORM (Hyphantria cunea) - FLORIDA - First adults in blacklight traps at Gainesville, Alachua County, March 9-10. (Habeck, Mead).

FOREST TENT CATERPILLAR (Malacosoma disstria) - COLORADO - Egg survey indicates populations will be same as in 1968 in Fort Collins area, Larimer County. (Thatcher).

FALL CANKERWORM (Alsophila pometaria) - MICHIGAN - Blacklight collections in Livingston County: 123 males March 18, 19, and 23. (Newman).

SPRING CANKERWORM (*Paleacrita vernata*) - MICHIGAN - Adults active in Muskegon and Ingham Counties. (Janes, Mar. 17).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - MICHIGAN - Taken in Wayne County. (Janes, Mar. 17).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - One case reported in U.S. March 16-22: TEXAS, Maverick County. Total of 71 cases reported in portion of Barrier Zone in Republic of Mexico March 16-22 as follows: Sonora 21, Chihuahua 5, Coahuila 3, Nuevo Leon 5, Tamaulipas 37. Total of 4 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 63,968,000; Mexico 137,820,000. (Anim. Health Div.).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - FLORIDA - Larvae averaged 11 per animal, some over 40 per animal, at Canal Point, Palm Beach County. Collected and determined by M.J. Janes, March 7. (Fla. Coop. Sur.). OKLAHOMA - Moderate in cattle in Mayes County. (Okla. Coop. Sur.).

FACE FLY (*Musca autumnalis*) - WASHINGTON - Adults very abundant in church in Sawyer, Yakima County, March 10. (Johnson, Retan). NEBRASKA - Active in Furnas and Lancaster Counties March 16. (Roselle). TENNESSEE - Heavy during warmer days in Knox County. (Williams). VIRGINIA - Found in homes throughout winter in Culpeper County. (Heltzel, Amos, Mar. 6).

A NOSE BOT FLY (*Cephenemyia jellisoni*) - OKLAHOMA - Adult activity light in Cherokee County. (Okla. Coop. Sur.).

HORN FLY (*Haematobia irritans*) - FLORIDA - Adults declined to average of 15 per animal in Belle Glade area by mid-March. Collected and determined by M.J. Janes. (Fla. Coop. Sur.).

SHEEP KED (*Melophagus ovinus*) - TEXAS - Moderate to heavy in Sutton, Edwards, and Pecos Counties. (Neeb).

MOSQUITOES - MISSISSIPPI - Adults and larvae, respectively, collected in Hancock County: *Culiseta inornata* 175 and 49; *Culex salinarius* 15 and 4; *C. restuans* 13 and 185; *C. territans* 0 and 86; *Anopheles crucians* 12 and 0; *Aedes vexans* 3 and 12; *A. canadensis* 0 and 20. (Dinkins, Mar. 17).

LICE - OKLAHOMA - *Haematopinus eurysternus* (short-nosed cattle louse) heavy on cattle in Cotton and Mayes Counties and moderate in Cleveland and Nowata Counties. (Okla. Coop. Sur.). TEXAS - *Bovicola ovis* (sheep biting louse) heavy on sheep in Crockett, Pecos, and Edwards Counties; unspecified goat lice heavy in Sutton and Edwards Counties. (Neeb).

WINTER TICK (*Dermacentor albipictus*) - TEXAS - Moderate to heavy in Sutton and Edwards Counties. (Neeb).

BROWN RECLUSE SPIDER (*Loxosceles reclusa*) - OKLAHOMA - Very heavy in home in Tulsa, Tulsa County. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

A WEEVIL (*Brachyrhinus rugosostriatus*) - NEVADA - Adults light in home in Caliente, Lincoln County, in August 1968. Identified by R.C. Bechtel. This is a new county record. (Miller).

BROWN SPIDER BEETLE (Ptinus clavipes) - IOWA - Found in basement of home in Sac City, Sac County. This is a new county record. (Iowa Ins. Sur.).

A SUBTERRANEAN TERMITE (Reticulitermes sp.) - IOWA - Probably R. flavipes (eastern subterranean termite) swarmed in Cedar Rapids, Linn County, March 17. First report of swarming in 1969. (Iowa Ins. Sur.).

STORED PRODUCTS

GRANARY WEEVIL (Sitophilus granarius) - WYOMING - This weevil, Tribolium confusum (confused flour beetle), and Rhyzopertha dominica (lesser grain borer) medium in stored barley at Agriculture Experiment Station in Torrington, Goshen County. (Parshall).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Weekly checks of 225 traps operated in control zone made during February. Weevils caught during week of February 24. (PPC South. Reg.).

BROWN-TAIL MOTH Nygmia phaeorrhoea) - MAINE - Winter mortality check made of winter webs in Portland area. Few larvae emerged from web collected at one location; up to 100 larvae emerged from single web at another location. Winter weather to end of February will probably have little adverse effect on larvae. NEW HAMPSHIRE - Survey hampered by heavy snow. To date, 2 single web infestations found at widely separated locations; Henniker Township in Merrimack County and Moultonboro Township in Carroll County. Both webs at old infestation sites. MASSACHUSETTS - Scouting to delimit known infested areas on Cape Cod begun February 10, webs clipped in lightly infested areas, and detection survey in Cape area also started. Limited survey being conducted in western part of State. (PPC East. Reg.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - NORTH CAROLINA - Surveys conducted in Brunswick, Carteret, Columbus, Onslow, and Pamlico Counties during February. Imported fire ant found in all counties except Pamlico. Surveys in Robeson and Cumberland Counties negative. (PPC South. Reg.). GEORGIA - Collected along county road 5 miles south of Waverly, Camden County, March 6. Referred by K.L. Davenport. Determined by D.R. Smith. This is a new county record. (PPC).

CITRUS BLACKFLY (Aleurocanthus woglumi) - TEXAS - Survey during February concentrated in Brownsville area of Cameron County. Limited surveys made in Webb and Zapata Counties. No A. woglumi found. (PPC South. Reg.).

GYPSY MOTH (Porthetria dispar) - NEW JERSEY - Egg mass surveys in vicinity of positive trap sites continued during February. Small infestations found about 3 miles west of heavy infestation at Weekstown, Atlantic County. PENNSYLVANIA - Scouting continued in Carbon, Schuylkill, and Berks Counties to determine if additional areas of heavy infestation present on or near Blue Mountain Ridge; results negative. Federal and State personnel continued to scout positive trap sites in Luzerne, Bucks, Lackawanna, and Susquehanna Counties. Scouting completed in Lackawanna and Susquehanna Counties; no heavy infestations found. Six egg clusters found near Tobyhanna Army Depot in Clifton Township, Lackawanna County; 20 egg masses found near Alden in Newport Township, Luzerne County. (PPC East. Reg.).

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Larvae collected on wild cotton at two locations in Everglades National Park, Monroe County; Bouy Key location K-32 and Cape Sable. (Humphries, Weaver, Mar. 16).

A SEED CHALCID (*Megastigmus pistaciae*) - CALIFORNIA - During February 2,100 nuts from 1967 pistachio crop at U.S. Plant Introduction Station inspected; 53 live larvae, numerous dead larvae, and one dead male adult collected. Additional pistachio seeds from several portions of infested orchard placed in emergence cages in effort to secure guideline information for timing of spray applications. (PPC West. Reg.).

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - Surveys during February revealed following new infestations: 6 in Baldwin County, ALABAMA; 2 in Decatur County, GEORGIA; one in Rapides Parish and one in Ouachita Parish, LOUISIANA; one in Jefferson Davis County, MISSISSIPPI. (PPC South. Reg.).

HAWAII INSECT REPORT

Cotton - Larvae of PINK BOLLWORM (*Pectinophora gossypiella*) medium on wild cotton plants along roadsides at Waipahu, Ewa, and Waianae, Oahu. Random inspection showed 10 of 20 bolls in each area with one or more larvae. (Funasaki).

Turf, Pastures - A GRASS WEBWORM (*Herpetogramma licarsisalis*) infestation subsided and now at lowest level in many months on pastures at Haiku, Maui. Population very light on turf grasses and pastures in areas on Maui and all other islands. (Miyahira et al.). GRASS FLEAHOPPER (*Halticus chrysolepis*) nymphs and adults heavy on Tifgreen Bermuda grass lawns in Kaneohe, Oahu. Adults of a FLEAHOPPER (*Spanogonicus albofasciatus*) light on some lawns. Feeding injury (whiteness of blades) conspicuous. (Leong).

General Vegetables - WATERLILY APHID (*Rhopalosiphum nymphaeae*) heavy on taro at Hanalei, Kauai. (Sugawa). SWEETPOTATO LEAF MINER (*Bedellia orchilella*) heavy and sporadic in one-acre sweetpotato field at Waimanalo, Oahu. As many as 12 larvae per leaf. Trace to light at Waiahole and Kahaluu. IMPORTED CABBAGEWORM (*Pieris rapae*) eggs and adults heavy, larvae medium on head cabbages at Pulehu, Maui, and on broccoli at Kahuku, Oahu. (Miyahira, Funasaki). SOUTHERN GREEN STINK BUG (*Nezara viridula*) light to medium, mostly nymphs, on backyard long beans at Ewa and Waipahu, Oahu. Nymphs and adults medium on yard-long beans at Koko Head. Seventy-five percent of adults observed bore eggs of *Trichopoda pennipes* var. *pilipes* (a tachina fly) at Ewa and Waipahu, 40 percent at Koko Head. (Wong).

Fruits - LITCHI MITE (*Aceria litchii*) widespread on litchi trees throughout Hilo, Hawaii. Injury to leaves (brown, felt galls) very noticeable on trees. (Yoshioka).

Miscellaneous Insects - Two adults of a LONGHORN GRASSHOPPER (*Euconocephalus nasutus*) picked up at the Honolulu International Airport; one at gate 11 on March 11 and the other at gate 18 on March 12. These were fourth and fifth known specimens collected to date on Oahu. (Au, Shiroma). Larvae of KOA HAOLE LOOPER (*Anacamptodes fragilaria*) light to medium on foliage of tree tobacco (*Nicotiana glauca*), kiawe (*Prosopis pallida*), and koa-haole (*Leucaena leucocephala*) in various areas on Oahu; heavy on rose foliage at Koko Head. (Nakao).

INSECT DETECTION

New State Records

A JAPANESE WEEVIL (*Calomycterus setarius*) - WEST VIRGINIA - Collected July 17, 1968, at Beaver, Raleigh County, by A.E. Cole. Determined by R.E. Warner. (W. Va. Ins. Sur.).

New County Records

CLOVER SEED WEEVIL (*Miccotrogus picirostris*) - MISSOURI - Boone County. (p. 212).

A WEEVIL (*Brachyrhinus rugosostriatus*) - NEVADA - Lincoln County. (p. 215).

BROWN SPIDER BEETLE (*Ptinus clavipes*) - IOWA - Sac County. (p. 216).

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - GEORGIA - Camden County. (p. 216).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 3/17-20, BL - Armyworm (*Pseudaletia unipuncta*) 3, black cutworm (*Agrotis ipsilon*) 5, granulate cutworm (*Feltia subterranea*) 10. TEXAS - Brownsville - 3/14, 2BL - Armyworm 26, black cutworm 60, cabbage looper (*Trichoplusia ni*) 19, corn earworm (*Heliothis zea*) 60, pale-sided cutworm (*A. malefida*) 75, tobacco budworm (*Heliothis virescens*) 2, variegated cutworm (*Peridroma saucia*) 19. Waco - 3/14-20, BL - Armyworm 20, granulate cutworm 4, variegated cutworm 28.

Weather of the week continued from page 210.

TEMPERATURE: A large high pressure area extending from the Rocky Mountains to the Atlantic Ocean early in the week brought rising temperatures over the Central and Eastern States. Montana experienced mild weather after 3 months with below normal temperatures. Temperatures averaged slightly below normal along the Red River of the North and the Big Sioux River due to the deep snow cover. Sunny, mild weather prevailed in the Deep South at midweek but failed to offset the cool temperatures accompanying the cloudy, showery weather early in the week and over the weekend. A large area along the western edge of the northern Great Plains from eastern Montana to northwestern Kansas averaged 6°-8° above normal. The Great Lakes region also averaged 6°-8° warmer than seasonal. (Summary supplied by Environmental Data Service, ESSA.)

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1968

(Continued from page 206)

ORNAMENTALS

Highlights:

BAGWORM was the most destructive pest of coniferous shrubs in Alabama, was heavy in Tennessee and Arkansas, and damaged evergreens in Oklahoma. Larvae of TORTRICID MOTHS were damaging in some areas. BLACK VINE WEEVIL and related species were damaging in scattered areas. Various SCALE INSECTS damaged numerous ornamentals in several States. THRIPS and SPIDER MITES were troublesome in a few areas.

BAGWORM (*Thyridopteryx ephemeraeformis*) was common on many ornamentals throughout MARYLAND. Larvae were again the most destructive pests of coniferous shrubs throughout ALABAMA. Egg hatch in central TENNESSEE began about mid-May. By mid-June damage was heavy and ranged moderate to heavy statewide. Damage in some central and eastern areas was heavier than in recent years; unsprayed ornamentals were completely defoliated in many instances. Bagworm infestations were heavy and widespread throughout ARKANSAS. Activity in OKLAHOMA began in late May. Moderate to heavy numbers damaged evergreens throughout the summer. Bagworm larvae continued to infest ornamentals throughout MISSOURI. Serious defoliation occurred on saw log size eastern redcedar in Douglas County. Egg hatch in NEBRASKA was completed by June 18 in Lancaster County. Population levels were about the same as in 1967. Large numbers of bagworm infested juniper near Spencer in McCook County, NEBRASKA, in mid-September.

A TORTRICID MOTH (*Cacaecimorpha pronubana*) was found on *Viburnum davidii*, Japanese skimmia, and dwarf rhododendron in Multnomah County, OREGON. It was found for the first time in Clatsop County. *Platynota stultana* infested a wide variety of hosts in CALIFORNIA. In May and June in Washoe County, NEVADA, *Choristoneura zapulata* heavily damaged various ornamental shrubs, especially roses, and *Argyrotaenia cockerellana* was again heavy on ornamental juniper in the southern Nevada area but with less damage than in the last 3 years. Heavy numbers of OBLIQUE-BANDED LEAF ROLLER (*C. rosaceana*) persisted in large greenhouses in New Haven County, CONNECTICUT.

A PTEROPHORID MOTH (*Platyptilia pica monticola*) was serious on geraniums in CALIFORNIA. MOURNING-CLOAK BUTTERFLY (*Nymphalis antiopa*) caused some damage in the northern area, and a WALSHIID MOTH (*Periploca nigra*) was severe in a few locations. LILAC LEAF MINER (*Gracillaria syringella*) damaged lilacs in most MONTANA communities east of the Continental Divide. IO MOTH (*Automeris io*), HAG MOTH (*Phobetron pithecium*), and LESSER CANNA LEAF ROLLER (*Geshna cannalis*) damaged ornamentals in TEXAS. One to four larvae of SUGARCANE BORER (*Diatraea saccharalis*) infested 40 percent of the stalks of pampasgrass at Samsula, Volusia County, in FLORIDA in early October. Healthy plants were reduced from 180,000 to 60,000 in a 30-acre field in one year; 50 percent of the reduction was due to "knocking back" of the plumes. Wasp parasites recovered included *Agathis* sp. (a braconid) and *Trichogramma* sp. (a minute egg parasite). BEET ARMYWORM (*Spodoptera exigua*), a noctuid LOOPER complex, and a mite complex were predominant on chrysanthemums in the Bradenton area of Manatee County, FLORIDA. *S. exigua* was also prevalent on gladiolus in this area. W-MARKED CUTWORM (*Spaelotis clandestina*) infested ornamentals by May 31 in WISCONSIN; some treatment was done in Wood County. RHODODENDRON BORER (*Ramosia rhododendri*) infestations were heavy and numerous during April and May in New Castle County, DELAWARE.

BLACK VINE WEEVIL (*Brachyrhinus sulcatus*) adults emerged by July 11 in RHODE ISLAND. Infestations in nurseries were light by August 8, but by August 22 some infestations were heavy. The number of quarantined nurseries decreased from 15 in 1967 to 5 in 1968. Black vine weevil ranged light to heavy on yew throughout CONNECTICUT. This weevil persisted as a major problem in MICHIGAN on nursery and established plantings of yew. Control attempts were generally inconsistent. *Brachyrhinus* spp. adults in UTAH were common about gardens, sometimes damaging roots of roses or other plants and flowers in some gardens. A WEEVIL (*Brachyrhinus cribricollis*) in ARIZONA was heavy on plantings of chrysanthemum, nasturtium, privet, and pyracantha at Tucson, Pima County, in September and October. Black vine weevil damaged nursery stock and yard shrubs in local areas of CALIFORNIA. HOLLYHOCK WEEVIL (*Apion longirostre*) was found on hollyhock at Pine Bluffs, Laramie County, WYOMING, for a new State record.

TEN-LINED JUNE BEETLE (*Polyphylla decemlineata*) larvae were heavy in trees and shrubs at Pompeys Pillar, Yellowstone County, and Kalispell, Flathead County, MONTANA. A FALSE POWDER-POST BEETLE (*Amphicerus cornutus*) severely damaged old bougainvillea plantings at Glendale, Maricopa County, ARIZONA, in July.

EUONYMUS SCALE (*Unaspis euonymi*) heavily infested several varieties of euonymus in the Albuquerque area of Bernalillo County, NEW MEXICO. Many homeowners replaced infested euonymus with other shrubs because they were unable to control this pest. Euonymus scale damaged ornamentals in TEXAS and was again heavy on euonymus in OKLAHOMA. Crawlers were active in Oklahoma in mid-May, mid-June, early August, mid-September, and mid-October. Possibly the most destructive pest of ornamentals, euonymus scale was widespread in ARKANSAS. Euonymus scale was common in all parts of VIRGINIA, and many heavy infestations occurred on euonymus throughout DELAWARE.

OYSTERSHELL SCALE (*Lepidosaphes ulmi*) damage was common on lilacs and other susceptible shrubs in UTAH, and the pest damaged ornamentals in TEXAS. Infestations in SOUTH DAKOTA were heavy on lilac hedges at Rapid City, Pennington County, and at Spearfish, Lawrence County. Lilac at Spearfish had been extensively damaged; infestations were apparently several years old. Crawlers were evident on new growth the third week of June. Egg hatch in WISCONSIN began on May 17, and a few crawlers were exposed. Hatch was 75 percent complete on May 28, but only 40 percent of the crawlers were exposed on the plants. Crawlers began producing scales by June 21. High counts infested ornamentals in mid-July. Oystershell scale was prevalent on lilac in CONNECTICUT.

The following armored scales were also troublesome. In CALIFORNIA, CALIFORNIA RED SCALE (*Aonidiella aurantii*) was very widespread on many ornamentals, OLEANDER SCALE (*Aspidiotus nerii*) was particularly abundant, and OLIVE SCALE (*Parlatoria oleae*) was heavy in scattered local areas. JUNIPER SCALE (*Diaspis carueli*) numbers and damage increased again in UTAH. TEA SCALE (*Fiorinia theae*) damaged ornamentals in TEXAS, was the most destructive and widespread scale on camellia and Burford hollies in ALABAMA, and was one of the important pests in FLORIDA. *Phenacaspis cockerelli* was also an important pest in Florida.

The following soft scales were troublesome. *Toumeyella mirabilis* killed many mesquite trees in the northwestern area of Tucson in Pima County, ARIZONA, during May. BROWN SOFT SCALE (*Coccus hesperidum*) damaged ornamentals in TEXAS. A WAX SCALE (*Ceroplastes* sp.) in VIRGINIA is well established in the Norfolk area, severe in the Richmond area, and increasing in the northern areas. FLETCHER SCALE (*Lecanium fletcheri*) was still troublesome in several nurseries in CONNECTICUT. Fletcher scale eggs first hatched in RHODE ISLAND on July 11. *Lecanium* sp. was again one of the major problems on MICHIGAN-grown yew. Control attempts were generally inconsistent.

A MEALYBUG (*Dysmicoccus wistariae*) was heavy on yew in some nurseries in CONNECTICUT. This species was again one of the major problems on MICHIGAN-grown yew. Control attempts were generally inconsistent. LONG-TAILED MEALYBUG (*Pseudococcus longispinus*) was one of the important ornamental pests in FLORIDA and was unusually prevalent this year in CALIFORNIA.

A CONIFER APHID (*Cinara tujafilina*) was one of the most frequently encountered aphids in CALIFORNIA. Populations on arborvitae in ARIZONA were heavy at Safford, Graham County, in early February and moderate to heavy at Tucson, Pima County, and Salt River Valley, Maricopa County, during March. In OKLAHOMA this aphid damaged arborvitae from early February to late April. Fall activity began in early December. CHRYSANTHEMUM APHID (*Macrosiphoniella sanborni*) heavily infested chrysanthemums in north-central and northeastern Oklahoma from mid-April to mid-May.

A LACE BUG (*Stephanitis takeyai*) was common wherever andromeda was found in CONNECTICUT. All stages of AZALEA LACE BUG (*S. pyrioides*) by August 13 and all stages of *S. takeyai* by August 22 heavily infested andromeda in RHODE ISLAND.

A LEAFHOPPER (*Opsius stactogalus*) heavily defoliated salt-cedar in Churchill and Lyon Counties, NEVADA, in September and October; light numbers were present in Pershing County.

EUROPEAN EARWIG (*Forficula auricularia*) caused early damage and was a nuisance most of the year in CALIFORNIA. Populations in UTAH may have leveled off as European earwig was less generally troublesome than 10-20 years ago. Numbers were, however, very heavy and troublesome in scattered communities and some canyon picnic areas and damaging in some flower gardens. In MONTANA this plant feeding and household nuisance was reported from about 20 counties. It still is not distributed over all of the State. European earwig is widespread in CONNECTICUT and more injurious to house plants.

THRIPS in general were less prevalent than previously in CALIFORNIA, but CUBAN-LAUREL THRIPS (*Gynaikothrips ficorum*) was very severe on *Ficus retusa*. WESTERN FLOWER THRIPS (*Frankliniella occidentalis*) heavily infested roses during April in the Salt River Valley of Maricopa County, ARIZONA, and was unusually heavy in many kinds of flowers in UTAH. GLADIOLUS THRIPS (*Taeniothrips simplex*) was generally present in Utah; injury ranged from light to very severe.

A FALSE SPIDER MITE (*Pentamerismus taxi*) infested Irish yew at Portland for a new State record in OREGON. SPIDER MITES (*Tetranychus* spp.) built up to economic levels on evergreens in several nurseries at Salem, Oregon, in early September. In CALIFORNIA, TWO-SPOTTED SPIDER MITE (*T. urticae*) was common and widespread, and an ERIOPHYID MITE (*Aculus ligustri*) was very common on privet. CARMINE SPIDER MITE (*T. cinnabarinus*) in ARIZONA built up on violets at Tucson, Pima County, in late July, was heavy on chrysanthemums at Yuma, Yuma County, in early August, and was heavy on arborvitae, pyracantha, and violets in the Phoenix area of Maricopa County during August and September. Unspecified spider mites were the most general and injurious pests of ornamentals statewide in NEVADA. Two-spotted spider mite and other spider mites were constant pests of roses, azaleas, and many other shrubs and annual flowers throughout ALABAMA. Two-spotted spider mite was one of the important pests in FLORIDA. Carmine spider mite was abundant on Japanese yew in a nursery in Hartford County, CONNECTICUT.

SLUGS were a serious problem for the second year in NEW HAMPSHIRE. Damage by *Deroceras* spp. in OHIO on annuals and perennials was reported many times. Damage to flowers continued into September. *Arion ater* was found on 3 residential properties in August at Pullman, Whitman County, WASHINGTON. Specimens were also taken from commercial nurseries at Spokane, Spokane County. This is believed to be the first record of establishment east of the Cascade Mountains in the State. A SNAIL (*Rumina decollata*) heavily infested gardens and lawns at Mesa, Phoenix, and Tempe in Maricopa County, ARIZONA, in November.

GARDEN SYMPHYLAN (*Scutigerella immaculata*) damaged arborvitae, juniper, yew, and various garden plants in OHIO.

FOREST INSECTS [1]

Situation in the Western States

All reports indicate that BARK BEETLE damage was again the major problem confronting forest managers in the West. MOUNTAIN PINE BEETLE (Dendroctonus ponderosae) still predominated in the Intermountain States with heavy infestations continuing to deplete lodgepole pine forests of eastern IDAHO and western WYOMING. However, the widespread infestations on the Teton National Forest, Wyoming, continued to decline. On the Targhee National Forest, Idaho, infestations collapsed from natural causes in some areas and built up in others. In the northern and central Rockies, this insect caused damage to ponderosa pine and white pine as well as lodgepole pine.

A number of other BARK BEETLES were active in western forests. For example, DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae) damage in 1968 was the highest recorded in recent years in OREGON and WASHINGTON; in the Southwest and Intermountain States, ENGELMANN SPRUCE BEETLE (D. obesus) is now a potential threat to a vast acreage of mature spruce; CALIFORNIA has an epidemic of WESTERN PINE BEETLE (D. brevicomis).

Forest DEFOLIATORS also caused concern. Among these were BUDWORMS, NEEDLE MINERS, and CASEBEARERS. The most significant areas of BUDWORM activity were in the central Rockies, in IDAHO, and in western MONTANA. LARCH CASEBEARER (Coleophora laricella) and NEEDLE MINERS were found in increasing numbers in OREGON and WASHINGTON and in the northern Rocky Mountain States.

In ALASKA the SITKA-SPRUCE BEETLE (Dendroctonus obesus) remained at epidemic levels on the Kenai Peninsula despite control efforts using both trap-trees and chemicals. A new infestation developed near Hyder in southeastern Alaska, and two old infestation centers in the south-central area became active again. Defoliation by the LARGE ASPEN TORTRIX (Choristoneura conflictana) was common throughout the interior. Hundreds of acres were completely defoliated in the Fairbanks and Glennallen areas. HEMLOCK SAWFLY (Neodiprion tsugae) populations declined sharply.

Hot, dry weather in the summer of 1967 contributed to an upsurge in all BARK BEETLE activity in OREGON and WASHINGTON. DOUGLAS-FIR BEETLE damage caused the loss of one billion board feet of timber. Greater populations of WESTERN PINE BEETLE, ENGELMANN SPRUCE BEETLE, PINE ENGRAVER (Ips pini), and FIR ENGRAVER (Scolytus ventralis) emerged and were destructive. Among the DEFOLIATORS, the LARCH CASEBEARER, the WESTERN HEMLOCK LOOPER (Lambdina fiscellaria lugubrosa), and NEEDLE MINERS were reported in increased numbers.

At present, the most pressing problem in CALIFORNIA is an epidemic of WESTERN PINE BEETLE in young-growth pine near McCloud. Localized outbreaks of other BARK BEETLES--such as FIR ENGRAVER, MOUNTAIN PINE BEETLE, DOUGLAS-FIR BEETLE--occurred but did not reach epidemic dimensions. The CALIFORNIA FLATHEADED BORER (Melanophila californica) continued to destroy Jeffrey pine in the southern part of the State. Jeffrey pine and lodgepole pine in El Dorado County suffered from an infestation of PINE NEEDLE SCALE (Phenacaspis pinifoliae). Damage from defoliating insects was minor.

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[1] This summary is the highlights section of the "Forest Insect Conditions in the United States - 1968" which was compiled and published by the Forest Service, U.S. Department of Agriculture. Copies of the complete annual summary are available upon request from the Regional Forester or Area Director in your area. Addresses of the regional offices may be found on page 226 in this issue of the CEIR.

MOUNTAIN PINE BEETLE in lodgepole pine was the main problem in the Intermountain States. The long-standing epidemic on the Teton National Forest, which started to decline in 1967, continued to lessen. On a noncontrol area of the Targhee National Forest, beetle populations were reduced by natural factors. In another area chemical control reduced tree killing and slowed migration into adjoining beetle-free stands. In a third area some tree-killing occurred when a control program was abandoned. Infestations increased on the Bridger National Forest and Yellowstone National Park, WYOMING. There was some slight buildup in MOUNTAIN PINE BEETLE populations in ponderosa pine throughout the entire Intermountain Region. In 1968, areas infested by SPRUCE BUDWORM (*Choristoneura fumiferana*) broadened, the largest increases being on the Payette and Bridger National Forests. ENGELMANN SPRUCE BEETLE also increased generally in portions of southern IDAHO and western WYOMING, but most other BARK BEETLES and DEFOLIATORS remained about as they were in 1967.

The northern Rockies experienced a general upsurge of both DEFOLIATORS and BARK BEETLES. MOUNTAIN PINE BEETLE caused losses in mature lodgepole, ponderosa, and white pine stands, particularly in the Kaniksu National Forest, IDAHO, and along the foothills of the Big and Little Snowy Mountains, MONTANA. Unburned slash and windthrown Engelmann spruce trees in the Flathead National Forest, Montana, contributed to a severe outbreak of ENGELMANN SPRUCE BEETLE there. In 1968 an epidemic of SPRUCE BUDWORM covered a total of 4.2 million acres of Douglas-fir and true fir forests in IDAHO and western MONTANA. SPRUCE BUDWORM and a FIR CONEWORM (*Dioryctria abietella*) destroyed a large amount of Douglas-fir seed in some areas of MONTANA. LARCH CASEBEARER spread through larch stands in western MONTANA, northern IDAHO, and eastern WASHINGTON, and was discovered for the first time in Glacier National Park, MONTANA.

The most important insect pest of the central Rockies was the BLACK HILLS BEETLE (*Dendroctonus ponderosae*) which increased in numbers on the Black Hills, Roosevelt, and San Juan National Forests. More than a quarter of a million acres are now infested. ENGELMANN SPRUCE BEETLE populations were low but were still a threat to over-mature Engelmann spruce in COLORADO and WYOMING. Areas of SPRUCE BUDWORM defoliation broadened, but damage did not increase, and no suppression is planned.

Throughout the Southwest, ENGELMANN SPRUCE BEETLE populations showed a trend toward epidemic proportions. On the Santa Fe National Forest, NEW MEXICO, this beetle emerged from scattered blowdown and attacked standing trees. There were other currently active ENGELMANN SPRUCE BEETLE centers on the Carson National Forest, New Mexico, and on the Apache National Forest, ARIZONA.

Situation in Southern and Southeastern States

BARK BEETLES were the major concern in the South and Southeast with the SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) again the most important pest. Populations were abundant in LOUISIANA, and new outbreaks occurred in the coastal plains of NORTH CAROLINA and in the Great Smoky Mountains National Park. In TEXAS, pine losses were the greatest since 1962. The outlook improved in MISSISSIPPI, ALABAMA, SOUTH CAROLINA, and VIRGINIA where SOUTHERN PINE BEETLE numbers declined. The BLACK TURPENTINE BEETLE (*D. terebrans*), which infested stumps and residual trees in logging areas of LOUISIANA, MISSISSIPPI, and TEXAS in 1967, subsided to the point where chemical control is now not necessary. Drought contributed to a buildup of ENGRAVER BEETLES (*Ips* spp.) in several areas. New infestations of BALSAM WOOLLY APHID (*Adelges piceae*) appeared in the Fraser fir forests of the southern Appalachians. SAWFLIES, FALL WEBWORM (*Hyphantria cunea*), and a variety of nuisance pests were evident in many localities.

Situation in the Lake and Central States and the Northeast

SPRUCE BUDWORM remained a major problem in the Northeastern States. In MINNESOTA about 500,000 acres of spruce-fir type are infested. Control may be needed in some recreation areas in 1969. SPRUCE BUDWORM remained active on over 80,000 acres near Oxbow, MAINE. Except in Lower MICHIGAN, JACK-PINE BUDWORM (*Choristoneura pinus*) populations were static in the Lake States. Outbreaks of PINE TUSSOCK MOTH (*Dasychira plagiata*) are recurring in MINNESOTA and WISCONSIN. SARATOGA SPITTLEBUG (*Aphrophora saratogensis*) populations are increasing in those two States and also in MICHIGAN and MAINE. Damage by BALSAM WOOLLY APHID continued in the fir stands of northern New England. A mixed population of FALL CANKERWORM (*Alsophila pometaria*) and OAK LEAF TIERS (*Croesia* spp.) defoliated over one million acres of oak in PENNSYLVANIA, NEW JERSEY, and WEST VIRGINIA. Several species of OAK LEAF ROLLERS damaged red oaks over a 360-square mile area in Lower MICHIGAN. SADDLED PROMINENT (*Heterocampa guttivitta*) again heavily defoliated hardwoods from the Lake States to New England. A disease reduced SADDLED PROMINENT populations in PENNSYLVANIA and Upper MICHIGAN; however, this insect is expected to increase in some areas of NEW YORK in 1969. The FOREST TENT CATERPILLER (*Malacosoma disstria*) continued to defoliate large acreages of aspen in MINNESOTA and MICHIGAN. BEECH SCALE (*Cryptococcus fagi*) moved into MASSACHUSETTS and NEW YORK causing mortality to sawtimber-size stands. Hardwood BORERS continue to damage oaks from MARYLAND to MISSOURI. The annual loss caused by these BORERS in Missouri is estimated at $2,000,000.

Suppression Activities

Continuing the trend of the past few years, bark beetles were the major target of control efforts in the Nation during 1968. Although the direct control effort against the mountain pine beetle in lodgepole pine stands of the intermountain West was reduced, it remained the largest bark beetle project in the country. Studies and continuous assessments of the direct frontal attack on this outbreak have led to realignment to emphasize salvage and harvest. In the future, less dependence will be placed on a direct control program.

In the South and Southeast the Forest Service joined with the States of North Carolina, Mississippi, Louisiana, and Texas in efforts to suppress the destructive southern pine beetle on Federal, State, and private forested lands. By the end of 1968, timely salvage logging, cutting and burning, or chemically treating infested trees had resulted in good control on all areas except in Texas and parts of Louisiana.

Only a minor amount of control work was needed on other bark beetles during 1968. Outbreaks of Douglas-fir beetle, spruce beetle, western pine beetle, and mountain pine beetle in ponderosa pine were handled by salvage and commercial thinning sales with minimum reliance on chemical treatment.

Control projects to suppress defoliating insects involved less acreage in 1968 than in other recent years. Only about 33,500 acres were sprayed, and of this total over 17,000 acres were treated in pilot control studies. One study (in cooperation with the Maine Forest Service) was made to evaluate the effectiveness of an organophosphate against the spruce budworm. The results were not satisfactory.

A carbamate that shows promise as a replacement for DDT for budworm control, was again tested in 1968 in Montana. The nonpersistent chemical was applied at the rate of 1 ounce in 1 pint of carrier per acre. The spray was applied by aircraft equipped with the aerosol spray system developed by Forest Service engineers. Control results were unsatisfactory, but this was not considered due to the ineffectiveness of the insecticide. Plans are to retest this carbamate in 1969 at a dosage rate of 2.4 ounces in one-half gallon of carrier.

Thorough and timely evaluations of jack-pine budworm outbreaks on National Forests in northern Michigan and Wisconsin led to the cancellation of a 174,000-acre aerial spray project, based mainly on a last minute natural reduction of the budworm population.

In other suppression activities, new outbreaks of pine shoot moth in eastern Washington and eastern Oregon were handled by both spraying and destruction of infested trees. Pine reproduction on 1,200 acres of the Coconino National Forest, Arizona, was aerially treated with dimethoate to prevent damage by the southwestern pine tip moth. A grasshopper infestation in young pine plantations on Mt. Shasta in northern California was aerially treated with malathion. The Agricultural Research Service handled this 4,200-acre project. Saratoga spittlebug was successfully controlled on 1,000 acres in Maine and on 1,900 acres in Wisconsin and Upper Michigan. Additional cooperative projects included white-pine weevil control in New York, larch sawfly in Maryland, European pine sawfly in Pennsylvania, Nantucket pine tip moth in Missouri, and pine tortoise scale control in Wisconsin.

Pest suppression projects are summarized in the following tabulation:

Pest Control Accomplishments in the United States, 1968

Insect	Location	Trees Treated	Acres Sprayed
Southern pine beetle	South and Southeast	266,104	
Black turpentine beetle	South and Southeast	40,431	
Black Hills beetle	Colorado, South Dakota, and Wyoming	17,555	
Mountain pine beetle	Idaho, Wyoming, and Utah	474,974	
White-pine weevil	New York	483,600	
Saratoga spittlebug	Wisconsin	111,750	
Balsam woolly aphid	North Carolina	26,255	
Spruce budworm	Idaho and Maine		33,560
Bark beetles [1]	California, Oregon, and Washington	45,606	
Miscellaneous	Entire United States	8,413	4,115
Total		1,474,688	37,675

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[1] Reported in various combinations of western pine beetle, mountain pine beetle, Jeffrey pine beetle, ips, flatheaded borers, etc.

REGIONAL AND AREA OFFICE ADDRESSES

U.S. FOREST SERVICE

Region

1 U.S. Forest Service
Federal Building
Missoula, Montana 59801

2 U.S. Forest Service
Federal Center, Building 85
Denver, Colorado 80225

3 U.S. Forest Service
Federal Building
517 Gold Avenue, S.W.
Albuquerque, New Mexico 87101

4 U.S. Forest Service
Federal Office Building
324 - 25th Street
Ogden, Utah 84401

5 U.S. Forest Service
630 Sansome Street
San Francisco, California 94111

Region

6 U.S. Forest Service
P.O. Box 3623
Portland, Oregon 97208

10 U.S. Forest Service
Federal Office Building
P.O. Box 1628
Juneau, Alaska 99801

Area

NA Northeastern Area
U.S. Forest Service
6816 Market Street
Upper Darby, Pennsylvania 19802

SA Southeastern Area
U.S. Forest Service
50 Seventh Street
Atlanta, Georgia 30323

SHADE TREES

Highlights:

FOREST TENT CATERPILLAR defoliated more than 300,000 acres of hardwoods in Michigan and 75,000 acres in Minnesota. GREAT BASIN TENT CATERPILLAR caused less damage to cottonwood in Utah than for several years. FALL WEBWORM increased in northern Indiana, was widespread in Virginia, and caused heavy defoliation at Bandelier National Monument in New Mexico; populations continued to increase in the Willamette Valley of Oregon. Several DEFOLIATORS damaged sugar maple in Vermont. Larvae of a TORTRICID MOTH caused heavy defoliation of oaks on 500,000 acres in east-central Pennsylvania. ELM LEAF BEETLE caused heavy defoliation of elms in several areas. An outbreak in northern Utah was the worst ever. ASIATIC OAK WEEVIL has spread to the better hardwood areas of Missouri and caused some heavy damage. LOCUST BORER caused severe damage in northern Utah. A BEECH SCALE-NECTRIA complex caused a loss of over 7 million board feet of beech on 2 million acres in Vermont. BIRCH LEAF MINER caused more damage than normal in Wisconsin.

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) tents and feeding occurred by May 6 in RHODE ISLAND; tents reached maximum size by May 23. Larvae were widespread throughout VIRGINIA in the spring. By mid-April hatch was completed across the entire range in OHIO, and webbing and defoliation were conspicuous on wild cherry and apple in some southern areas. Larval infestations continued through April and most of May. About the second week of June moth emergence began in the central and southern areas. Hosts included apple, wild cherry, flowering crab apple, quince, and hawthorn. Large populations in counties adjoining the Ohio River were not so common in 1968 as in 1966 and 1967. Disease and parasitism may have contributed to the decline. Populations were heavier, however, in other counties in the southern half of Ohio and in some east-central counties. Eastern tent caterpillar in southern INDIANA declined sharply relative to the heavy numbers of 1965 through 1967. Hatch in WISCONSIN began by April 12; pupation was underway by June 7. Defoliation occurred mostly on chokecherry, apple, and mulberry trees. In ARKANSAS the light numbers of mid-April remained light.

FOREST TENT CATERPILLAR (*Malacosoma disstria*) populations remained very low in VERMONT. This pest defoliated more than 300,000 acres of mixed hardwood stands in Antrim, Charlevoix, and Kalkaska Counties, MICHIGAN. Not so severe infestations were noted in Wexford and Grand Traverse Counties. Other infestations in the Lower Peninsula did not reach severe defoliation proportions in 1968 but may in 1969. The area of heavy defoliation in MINNESOTA was smaller than that in 1967. Defoliation was heavy on about 75,000 acres and ranged from very light to light on about 2 to 3 million acres of *Populus* sp. and hardwoods such as birch and ash. About 7 million acres covering about 300 townships in northeastern Minnesota are involved. No controls, other than individual efforts, are projected for 1969. While light in many MONTANA communities, forest tent caterpillar was heavy at Havre, Hill County; Chinook, Blaine County; Dillon, Beaverhead County; and Bozeman, Gallatin County. Forest tent caterpillar in UTAH was lighter than normal generally, but susceptible hosts were damaged in several canyons.

GREAT BASIN TENT CATERPILLAR (*Malacosoma fragile*) caused less damage to cottonwood foliage in Washington, Grand, San Juan, and southern Emery Counties, UTAH, than in several years. A TENT CATERPILLAR (*M. incurvum discoloratum*) was heavy on poplar in Clark County, NEVADA, in March and April. Local abundance of *M. constrictum* in Marion County, OREGON, indicated a great increase in population.

MIMOSA WEBWORM (*Homadaula anisocentra*) was reported in 18 new IOWA counties from 3 different areas in 1968. Damage to honeylocust was quite severe. In INDIANA second-generation damage to honeylocust was more widespread than for several years. The southern districts had the heaviest infestations, up to 60 percent browned foliage. In OHIO honeylocust defoliation was particularly heavy and widespread, up to 80-90 percent in late July and early August. By the first week of June early instars had begun feeding on honeylocust in the east-central area. In mid-July severe and widespread defoliation began to appear. By the first week of August second-generation larvae were present. Mimosa webworm ranged moderate to heavy in most of MARYLAND and was common throughout VIRGINIA. Numbers in central and western TENNESSEE were heavy from early August into fall. Severe damage was localized. Mimosa webworm was again the major pest of mimosa trees throughout ALABAMA. Light activity in OKLAHOMA began in mid-July. This pest was present in at least 21 counties in the north-central, northeastern, central, east-central, and southeastern areas. Leaf damage ranged 70-90 percent in all but marginal areas. Mimosa webworm extended its range in CALIFORNIA into Tehama County.

FALL WEBWORM (*Hyphantria cunea*) webbing in RHODE ISLAND was evident by July 28 with many large tents by September 3. Numbers in OHIO did not start to increase until late July and early August. About the third week of August larval numbers were near their seasonal peak, and webbing was extremely common through much of central to eastern Ohio. By early September larvae were approaching full growth. Numbers in southwestern INDIANA were lighter than in 1967 on hickory, walnut, and wild cherry trees. In northern Indiana populations increased slightly from the low levels of 1967. Webs were first observed in mid-July in the southern areas and in late July in the north. Fall webworm was widespread throughout VIRGINIA. Webs and defoliation became noticeable in August throughout TENNESSEE. Defoliation was heavy on redbud and oaks, especially in the central and in some western areas of Tennessee.

Fall webworm appeared in mid-May in southern ARKANSAS. Infestations were lighter than normal, especially in the northwestern area. Numbers in MISSOURI were lower in 1968 than in 1967; some parts of the southwestern area had moderate to heavy damage on individual trees. The first generation in KANSAS was numerous during June and early July, but the second generation was no greater than in past years. Fall webworm was light on most ornamentals and heaviest on cottonwoods and wild plums in southwestern, central, and northern NEBRASKA. Defoliation in NEW MEXICO was heavy on cottonwoods and willows at Bandelier National Monument near Los Alamos, San Miguel County, and occurred to shade trees throughout most of the State. Populations are still increasing in the Willamette Valley of OREGON. Many trees were almost completely defoliated, and new adults were seen at lights in Salem in late May.

YELLOW WOOLLYBEAR (*Diacrisia virginica*) was very abundant in shelterbelts in the northeastern and east-central parts of MONTANA. HICKORY TUSSOCK MOTH (*Halisidota caryae*) larvae in TENNESSEE damaged forest and shade trees in Johnson County during early July. *Halisidota* sp. was moderately abundant with light sycamore defoliation in PENNSYLVANIA in August. SYCAMORE TUSSOCK MOTH (*Halisidota harrisii*) larvae were reported on sycamore in RHODE ISLAND on September 4.

SADDLED PROMINENT (*Heterocampa guttivitta*) along with GREEN-STRIPED MAPLEWORM (*Anisota rubicunda*), and PINK-STRIPED OAKWORM (*A. virginiensis*) defoliated 1,612 acres of sugar maple, beech, and yellow birch trees in the Groton State Forest of VERMONT late in the season. Saddled prominent larvae in PENNSYLVANIA defoliated more than half of 1,500 acres in Wayne County. Smaller, localized areas were infested throughout the northeastern quarter of the State. Defoliation ranged moderate to heavy on 50,000 acres. VARIABLE OAK LEAF CATERPILLAR (*H. manteo*) defoliated 80-90 percent of the oaks over several square miles of Worcester County, MARYLAND. YELLOW-NECKED CATERPILLAR (*Datana ministra*) was heavier on pin oaks in northern INDIANA during August than for the past 5 years. RED-HUMPED CATERPILLAR (*Schizura concinna*) in CALIFORNIA was much lighter in 1968 than in 1967.

LINDEN LOOPER (*Erannis tiliaria*) defoliated up to 40 percent of 100 acres of sugar maples in Hazen's Notch, VERMONT, in the spring. FALL CANKERWORM (*Alsophila pometaria*), primarily, defoliated about 15,351 acres of red maples and elms in the wetlands of the Champlain Valley, Vermont. It was associated with linden looper, SPRING CANKERWORM (*Paleacrita vernata*), and ELM SPANWORM (*Ennomos subsignarius*). Fall cankerworm partly defoliated a wide area of northeastern PENNSYLVANIA with less damage than in 1967. Defoliation in Lackawanna, Luzerne, and Wyoming Counties was about half that of 1967. A GEOMETRID MOTH (*Physostegania pustularia*) aroused much concern in Pennsylvania in late June and early July when thousands of moths descended upon homes in the evenings. The greatest moth numbers occurred in Schuylkill, Berks, Dauphin, Perry, Mifflin, and Northumberland Counties. Some red maples were defoliated in Dauphin County. Spring cankerworm in SOUTH DAKOTA defoliated elms near Pickstown, Charles Mix County, and Spearfish, Lawrence County, in late May and early June. Some controls were applied. *Eulype hastata* caused minor defoliation of white birch in the northern Black Hills of South Dakota late in August. Adults and larvae of fall cankerworm were found on cottonwoods at Mildred, Prairie County, MONTANA.

A TORTRICID MOTH (*Croesia* sp.) caused 80 percent defoliation to the pin oaks along Merrit Parkway in Fairfield County, CONNECTICUT. *C. semipurpurana* continued heavy in large areas of PENNSYLVANIA, especially through the east-central section. Larvae heavily defoliated about 0.5 million acres of oaks. Oak mortality was 20-25 percent in this area. *Archips semiferanus* extensively damaged oaks with some tree mortality in the northeastern Lower Peninsula of MICHIGAN. Severity should continue in 1969, but controls are expected only for high value trees.

DOGWOOD BORER (*Thamnosphecia scitula*) was common on ornamental plantings in CONNECTICUT and was widespread and damaging to 50 percent or more of the trees in lawn and street plantings in ALABAMA. LILAC BORER (*Podosesia syringae syringae*) infested ash trees in the northern, central, and eastern counties of MONTANA. A CLEARWING MOTH (*Aegeria tibialis*) heavily damaged poplar trees in Mono County, CALIFORNIA.

The following Lepidoptera were also troublesome. MAPLE TRUMPET SKELETONIZER (*Epinotia aceriella*) was unusually common on shade trees in NEW HAMPSHIRE, and SATIN MOTH (*Stilpnotia salicis*) completely defoliated ornamental poplars in several areas of the State. In VERMONT satin moth defoliation was noted in Addison County and on individual poplars scattered throughout the State. OAK SKELETONIZER (*Bucculatrix ainsliella*) was heavy in areas of New Haven County, CONNECTICUT. Heavy numbers of BAGWORM (*Thyridopteryx ephemeraeformis*) infested several tree species, including sycamore, throughout DELAWARE. It also heavily defoliated many sweetgums, locusts, and willows along a 6-mile roadside area in Prince Georges County, MARYLAND. PALMERWORM (*Dichomeris ligulella*) was unusually heavy in scattered but extensive locations in south-central, southeastern, east-central, and northeastern OHIO. Primarily oaks were infested; the amount of defoliation varied. By July 3 pupation was underway in northeastern Ohio.

Other troublesome Lepidoptera were reported in two States in the western area. CARPENTERWORM (*Prionoxystus robiniae*) has become a threat to shade trees in an increasing number of MONTANA communities. It now occurrs in McCone, Garfield, Fallon, Hill, Blaine, Lewis and Clark, Park, and Gallatin Counties. Larvae of MOURNING-CLOAK BUTTERFLY (*Nymphalis antiopa*) in Montana infested elms heavily in Chouteau, Yellowstone, Hill, Rosebud, Teton, and Liberty Counties. Evidence of a LYONETIID MOTH (*Paraleucoptera albella*) in Montana was again prevalent in Valley, Judith Basin, Broadwater, and Hill Counties. Damage by larvae of a NOCTUID MOTH (*Oncocnemis punctilinea*) to ash in NEVADA ranged medium to heavy in Clark and southern Nye Counties in April, and damage by BOXELDER LEAF ROLLER (*Gracillaria negundella*) to boxelder was heavy in Eureka and Lander Counties and moderate in Elko County in August and September.

ELM LEAF BEETLE (*Pyrrhalta luteola*) was unusually abundant and persisted late in the year in CALIFORNIA. Migrating adults created household problems. Numbers were heavy throughout its range in NEVADA, which was increased to include Esmeralda County. This pest is now known from all counties except Elko and White Pine. This leaf beetle was unusually numerous in many UTAH communities, and an outbreak in Cache County was considered the worst ever. First adults appeared on Chinese elms at Tucson in Pima County, ARIZONA, on March 15, and first instars with many egg masses by April 5. Heavy numbers occurred at Page, Coconino County, from mid-April through May in Mohave County during June, and during July and August in Pima, Pinal, and Coconino Counties, and the Salt River Valley of Maricopa County.

Elm leaf beetle in NEW MEXICO defoliated Siberian elms in 6 northwestern counties, 2 southwestern counties, one south-central county, and one southeastern county. This leaf beetle seriously damaged elms throughout the northern, Rolling Plains, and Trans-Pecos areas of TEXAS. In OKLAHOMA it damaged Siberian elms from early April through September. Defoliation was moderate to heavy in most areas. Elm leaf beetle continued to be the most serious shade tree pest in KANSAS. The heaviest damage in MISSOURI occurred on Chinese elms in the metropolitan areas. From central to northern ALABAMA this pest continued to defoliate and seriously damage elms in lawn and street plantings. Heavy infestations occurred by August 8 in RHODE ISLAND. Damage to elms in VERMONT was very heavy at Essex Junction, Chittenden County, and moderate at Springfield and Woodstock, Windsor County.

The following chrysomelid beetles were also troublesome. ALDER FLEA BEETLE (*Altica ambiens*) severely defoliated alder in coastal areas of Lane and Lincoln Counties and at various locations along the crest of the Cascades in OREGON. COTTONWOOD LEAF BEETLES (*Chrysomela scripta* complex) were heavy on cottonwood in Inyo County, CALIFORNIA, and were reported from scattered areas over MONTANA. ELM CALLIGRAPHA (*Calligrapha scalaris*) was occasionally a pest in OKLAHOMA and caused less damage in KANSAS in 1968 than in 1967. LOCUST LEAF MINER (*Xenochalepus dorsalis*) heavily damaged black locust trees throughout MARYLAND as it has done in the last 3 years. IMPORTED WILLOW LEAF BEETLE (*Plagiodera versicolora*) was conspicuous throughout the Eastern Shore and southern sections of Maryland. This beetle was common on willow in CONNECTICUT. Adults were on willow by May 16 and on elm by June 13 in RHODE ISLAND. Many infested willow by September 11. Imported willow leaf beetle heavily damaged willows throughout NEW HAMPSHIRE.

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) was very abundant in dead and dying American elms in Canyon and Ada Counties in IDAHO during August. This beetle became active in OKLAHOMA in mid-April. Emergence of first-generation adults was well underway April 29 in Lancaster County, NEBRASKA. The second brood appeared about mid-August. Smaller European elm bark beetle was not found in any new counties of MINNESOTA in 1968. Populations were about the same as in 1967, but the number of Dutch elm disease cases increased sharply.

POPLAR-AND-WILLOW BORER (*Cryptorhynchus lapathi*) damaged and killed willows in MONTANA in areas along the Little Blackfoot River; the Clark Fork near Deer Lodge, Powell County; Sourdough Creek near Bozeman, Gallatin County; and in several areas near Kalispell, Flathead County. ASIATIC OAK WEEVIL (*Cyrtepistomus castaneus*) was reported as a new State record for ARKANSAS and in 8 new counties in MISSOURI in 1968. In Missouri this weevil has spread to the better hardwood-growing regions; damage was heavy in some areas. Overwintered adults of a LEAF-MINING WEEVIL (*Odontopus calceatus*) in south-central OHIO were feeding on the budding leaves of yellow-poplar in early May; eggs and larvae were also present. During May adults and larvae moderately defoliated yellow-poplar and sassafras in the southern area. Numbers were not so damaging in general in 1968 as during 1966 and 1967.

LOCUST BORER (*Megacyllene robiniae*) damage in UTAH was severe in Salt Lake and Davis Counties. Poplars and willows were damaged in scattered localities, but several thousand boxelder trees were defoliated in the northern area with especially severe damage in the lower areas of Wellsville, Logan, Blacksmith Fork, High Creek, and other canyons in the Cache Valley. Normal numbers of TWIG GIRDLER (*Oncideres cingulata*) were active in November in ARKANSAS. Locust borer lightly infested black locust by July 23 in RHODE ISLAND. Dead leaves and "flagging" oak twigs throughout Rhode Island by August 21 indicated high numbers of TWIG PRUNER (*Elaphidionoides villosus*).

BRONZE BIRCH BORER (*Agrilus anxius*) caused considerable damage to ornamental birch in Pendleton, Umatilla County, OREGON. The infestation has been present for several years. Some trees are now responding to cultural and chemical controls.

GIANT BARK APHID (*Longistigma caryae*) was reported in RHODE ISLAND on elm by August 23 and was numerous on willow by September 11. Occurrences in ARKANSAS were heavier and more widespread than in 1967. Early in January, oak was infested. During April and May, honeydew became a problem on cars in many areas. Giant bark aphid was heavy on oak, hickory, and sycamore trees in scattered areas of OKLAHOMA during April, May, and November. Giant bark aphid was heavy on a few sycamore trees during May at Sedona, Coconino County, ARIZONA.

The following aphids were also troublesome. PAINTED MAPLE APHID (*Drepanaphis acerifoliae*) appeared in ARKANSAS as early as mid-August, became heavy by October, and remained until frost. ELM LEAF APHID (*Myzocallis ulmifolii*) was an occasional pest in OKLAHOMA. This aphid and WOOLLY ELM APHID (*Eriosoma americanum*) in UTAH ranged from normal to very numerous. In Utah, painted maple aphid was light on silver maple, *Pemphigus* spp. galls were conspicuous on cottonwood leaves and petioles, and *Lachnus salignus* was below normal. In NEVADA, *Chaitophorus* sp. and *Pterocomma bicolor* developed medium to heavy infestations on poplar in Clark County in March and April, and *Prociphilus fraxinifolii* was heavy on ash trees in the west-central area in April and May. Woolly elm aphid, painted maple aphid, *Lachnus salignus*, and POPLAR PETIOLE GALL APHID (*Pemphigus populitransversus*) were some of the predominant aphids in CALIFORNIA. Poplar petiole gall aphid was also the predominant poplar gall maker in MONTANA. Infested trees were found in areas of Stanford, Judith Basin, Sheridan, Liberty, Madison, Teton, Cascade, Phillips, and Blaine Counties.

COTTONY MAPLE SCALE (*Pulvinaria innumerabilis*) was not a serious problem in MONTANA. This soft scale caused some concern on shade trees in Johnson County, TENNESSEE, in late July and was unusually heavy on maples in sections of Anne Arundel and Baltimore Counties, MARYLAND. CALICO SCALE (*Lecanium cerasorum*) found in DELAWARE in 1964, is becoming a serious pest on several ornamentals and shade trees, such as dogwood, maple, and sweetgum.

EUROPEAN ELM SCALE (*Gossyparia spuria*) did not occur so often as previously in CALIFORNIA, but normal numbers infested trees in UTAH, and in NEBRASKA populations remained high in central, southern, southwestern, northern, and northwestern areas. BEECH SCALE (*Cryptococcus fagi*) and a fungus *Nectria coccinea* var. *faginata* were the main factors behind beech mortality on about 2 million acres in VERMONT. A recent survey indicates a loss of 7,655,523 board feet. *C. williamsi*, recently discovered in Vermont, is lightly distributed throughout the range of sugar maple in the State.

TEA SCALE (*Fiorinia theae*) was heavy on large hemlocks in the Greenwich area of Fairfield County, CONNECTICUT. Several heavy infestations of OBSCURE SCALE (*Melanaspis obscura*) were noted on oaks in New Castle County, DELAWARE. OYSTERSHELL SCALE (*Lepidosaphes ulmi*) was heavy on elms in SOUTH DAKOTA at Rapid City, Pennington County, and Spearfish, Lawrence County, and damage was heavy on lilac, cotoneaster, and willow trees in all areas of WYOMING. Oystershell scale numbers in UTAH were normal and commonly damaged willows and other susceptible shrubs.

CICADAS (*Magicicada* spp.) of Brood VIII in OHIO emerged from the ground in late May and were still emerging by the third week of June. In early July adults were still present in the emergence area in Columbiana, Trumbull, Mahoning, Jefferson, Portage, and Carroll Counties. In the second week of June oviposition damage began in the east-central area; by the end of June wilting or "flagging" and twig breakage were obvious. Although birds destroyed large numbers of many isolated populations, some areas continued to support active populations throughout June; Brood VIII, however, did not cause a significant amount of damage in eastern Ohio. Brood VIII of PERIODICAL CICADA (*M. septendecim*) appeared on schedule in PENNSYLVANIA in 12 western counties. Although numbers were moderately abundant, injury to forest trees was not serious. The earliest emergence occurred on May 14 in Westmoreland County with the latest on June 9 in Venango County.

A PLANT BUG (*Orthotylus chlorionis*) damaged honeylocusts for the past two years in MICHIGAN and is expected to continue to be of major concern in town, park, and home plantings. ASH PLANT BUG (*Neoborus amoenus*) was common on ash in UTAH and heavy on trees in Jefferson and Gallatin Counties, MONTANA. A COREID BUG (*Leptocoris rubrolineatus*) was very abundant on maple in Hood River and Jackson Counties, OREGON, and was very heavy and a considerable nuisance in CALIFORNIA. A LACE BUG (*Leptoypha barberi*) infested ash trees in San Diego and Fresno Counties, California.

BIRCH LEAF MINER (*Fenusa pusilla*) damage to shade trees appears less than usual in NEW HAMPSHIRE, but ornamental birch continues to be heavily infested statewide. Birch leaf miner adults were flying by May 6 in RHODE ISLAND and caused much less damage to birch than in past years. ELM LEAF MINER (*F. ulmi*) larvae mined leaves by June 13 in Rhode Island. Birch leaf miner was common in CONNECTICUT while MOUNTAIN-ASH SAWFLY (Pristiphora geniculata) showed an increase in New Haven County. The birch leaf miner infestation was general by June 6 in the southern two-thirds of WISCONSIN. Adults began emerging in Dane County by June 28. Damage was heavier than normal statewide with the most severe damage occurring in the southeastern quarter of the State.

AN ERIOPHYIID MITE (Aceria fraxinivorus) in ARIZONA killed several small modesto ash trees and severely damaged several others in an area of northern Tucson, Pima County. It was collected by G. Wene and J. May on May 17, 1968, and determined by H.H. Keifer. A heavy infestation was found on ash on July 24 in RHODE ISLAND.

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